In the Claims:

Please cancel claims 1 through 18 without any disclaimer and a prejudice to and add the following new claims.

19. A method for manufacturing a liquid crystal display device, comprising:

depositing spacers onto at least one of a first substrate and a second substrate, the spacers being distributed generally randomly along an inner surface of at least one of the first substrate and the second substrate, wherein the first substrate and the second substrate are made of a flexible polymer material, at least a portion of the spacers being coated with at least one of a photoinitiator and an accelerator lacquer initiator;

depositing a liquid crystal and pre-polymer mixture onto an inner surface of the first substrate and an inner surface of the second substrate; and

laminating together the first substrate and the second substrate to form a liquid crystal cell,

wherein if at least a portion of the spacers are coated with the photoinitiator, polymerization is initiated by exposing a first side of the liquid crystal cell and a second side of the liquid crystal cell to ultraviolet light causing scission of the photoinitiator and release of free radicals around the spacers coated with the photoinitiator, and

wherein polymerization is automatically initiated by the accelerator lacquer initiators after the liquid crystal and pre-polymer mixture is brought into contact with the accelerator lacquer coated spacers such that polymerization will proceed beginning around each spacer coated with the photoinitiator and/or the accelerator lacquer initiator such that polymer is localized to a region surrounding the spacers and along a direction normal to the first substrate and the second substrate.

20. The method of claim 19, further comprising coating, with a vapor barrier, an outside surface of the first substrate and an outside surface of the second substrate.

21. The method of claim 20, further comprising coating a layer of a transparent conductor on the first substrate and the second substrate, wherein the transparent conductor is patterned via at least one of chemical beam etching, electron beam etching and laser etching.

22. The method of claim 21, further comprising:

coating, with a polyimide solution, at least one of the first substrate and the second substrate coated with the transparent conductor; and

baking at least one of the first substrate and the second substrate to form a polyimide surface on thereon.

23. The method of claim 22, wherein the step of baking comprises baking at least one of the first substrate and the second substrate for about one hour at a temperature of about 150°C.

24. The method of claim 21, further comprising rubbing the polyimide surface to develop an alignment layer for the liquid crystal cell.

25. The method of claim 19, further comprising surface etching glass spacers to create the spacers which are coated with at least one of the photoinitiator and the accelerator lacquer initiator.

26. The method of claim 25, wherein the step of surface etching glass spacers comprises surface etching glass spacers having a diameter of about 3 to about 3.5 μm.

27. The method of claim 25, wherein the step of surface etching comprises using about a 1.25% solution of hydrofluoric acid for about 10 minutes while suspended in a solution in an ultrasonic vibration tank.

28. The method of claim 25, further comprising coating, after washing, the etched spacers with a mixture of an adhesion promoter and at least one of the photoinitiator and the

accelerator lacquer initiator by immersing the etched spacers into a solution containing the adhesion promoter and at least one of the photoinitiator and the accelerator initiator.

29. The method claim 28, wherein the adhesion promoter is a silane.

30. The method of claim 29, wherein the adhesion promoter is methacrylate silane.

31. The method of claim 19, wherein the step of depositing comprises depositing spacers with a density of at least about 30 spacers/mm^2.

32. The method of claim 19, wherein the step of depositing a liquid crystal and pre-polymer mixture comprises depositing a liquid crystal and pre-polymer mixture comprising of about 10% photoinitiator and/or accelerator lacquer initiator pre-polymer and about 90% liquid crystal material.

33. The method of claim 19, wherein the flexible polymer material of the first substrate and the second substrate is polyethersulphone.

34. The method of claim 19, wherein the substrate has a glass transition temperature greater than 150°C.

35. The method of claim 19, wherein the step of laminating together the first substrate and the second substrate to form a liquid crystal cell is performed at about room temperature.

36. The method of claim 35, further comprising raising a temperature of the first substrate and the second substrate after the step of laminating is completed.

37. The method of claim 19, comprising spacers coated with the photoinitiator and spacers coated with the accelerator lacquer initiator.

38. The method of claim 19, wherein the pre-polymer of the liquid crystal and pre-polymer mixture comprises aromatic amines and the accelerator lacquer initiator comprises peroxide and the method further comprises selecting a combination of the pre-polymer and accelerator lacquer initiator to control a rate of free radical generation rate, which when combined with diffusion rates of the pre-polymer and liquid crystal and spacings within a display region, result in the polymer being localized to the region surrounding the spacers.

39. The method of claim 19, wherein the step of depositing a liquid crystal and pre-polymer mixture onto an inner surface of the first substrate and an inner surface of the second substrate comprises depositing a liquid crystal, pre-polymer and polymer initiating or enhancing (PIE) material mixture onto an inner surface of the first substrate and an inner surface of the second substrate.

40. The method of claim 39, wherein a size of the PIE material is approximately 25% a size of the spacers.

41. The method of claim 39, wherein the PIE material is added to the liquid crystal and pre-polymer mixture such that the PIE elements have a cross-sectional density which is about two-times a cross-sectional density of the spacers.

42. The method of claim 41, wherein the PIE material comprises at least one of a structural PIE element (SPIE) and a non-structural PIE element (NSPIE), wherein the SPIE element and the NSPIE element increases a peel strength and a compressive strength of at least one of the first substrate and the second substrate and materials within the liquid crystal cell.

43. The method of claim 42, wherein the NSPIE element is in contact with one of the first substrate and the second substrate.

44. The method of claim 42, wherein the NSPIE element is not in contact with the first substrate and the second substrate.

45. The method of claim 42, wherein the SPIE element is in contact with the first substrate and the second substrate.

46. The method of claim 42, wherein the NSPIE element comprises at least one of glass and plastic and has a shape of at least one of a sphere and rod.

47. The method of claim 42, wherein the NSPIE element has a non-smooth surface.

48. The method of claim 42, wherein the NSPIE element is made of nanporous material.

49. The method of claim 39, wherein the PIE material comprises at least one of an accelerant and an initiator of the polymerization process.

50. The method of claim 49, wherein the initiator is at least one of a photoinitiator and an accelerator lacquer initiator.

51. The method of claim 50, wherein a concentration of the accelerant and/or the accelerator lacquer initiator is about 0.1% to about 0.5% of the pre-polymer in the liquid crystal cell.

52. The method of claim 49, wherein the PIE element comprises at least one of an adhesion promoter and an additive for improving elongation.

53. The method of claim 52, wherein the adhesion promoter is a silane.

54. The method of claim 53, wherein the adhesion promoter is methacrylate silane.

55. The method of claim 49, wherein the accelerant is a tertiary amine.

56. The method of claim 19, wherein the polymerization results in an acrylic adhesive.

57. The method of claim 19, wherein the polymerization results in at least one of an epoxy and an urethane.

58. The method of claim 19, wherein the liquid crystal and pre-polymer mixture comprises about 10% pre-polymer solution and about 90% liquid crystal material.

59. A method for manufacturing a liquid crystal display device, comprising:

filling a space between two facing substrates with a mixture of a pre-polymer and a liquid crystal material;

setting a rate of polymerization;

initiating polymerization by at least one of applying an external source of energy to initiate polymerization and bringing into contact an accelerator lacquer initiator with the mixture of pre-polymer and liquid crystal material, wherein as the polymerization proceeds a phase separation of the polymer and liquid crystal also proceeds, and

after initiation of polymerization and before completion thereof adjusting a rate of diffusion of the mixture of the pre-polymer and the liquid crystal material by at least one of adjusting reaction temperature and adjusting a viscosity of the mixture of the pre-polymer and the liquid crystal material to produce variation.

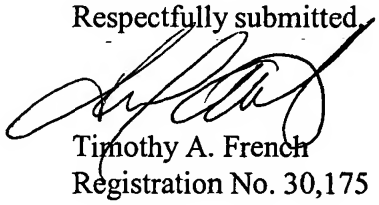
60. The method of claim 59, wherein the step of adjusting comprises adjusting the reaction temperature to 45°C or more.

61. The method of claim 59, wherein the step of adjusting comprises adjusting the viscosity of the mixture of the pre-polymer and the liquid crystal material to be 1000 cps or less.

Conclusion

It is respectfully requested that this amendment be entered prior to the examination of the above-referenced patent application. It is believed that no new matter is added by this amendment. By this amendment, claims 19-61 are now pending, among which claims 19 and 59 are independent claims. If the Examiner desires any additional information, the Examiner is invited to contact Applicants' attorney at the telephone number listed below to expedite prosecution.

Respectfully submitted,



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